

REMARKS

This is a full and timely response to the non-final Office Action of September 21, 2006. Reexamination, reconsideration, and allowance of the application and all presently pending claims are respectfully requested.

Upon entry of this First Response, claims 1, 3-5, 8, 9, 12, 13, 16, and 20-32 are pending in this application. The specification and claims 1, 3, 8, 21, and 22 are directly amended herein, and claim 10 is canceled. Further, claims 29-32 are newly added. It is believed that the foregoing amendments add no new matter to the present application.

Claim to Priority

It is alleged in the outstanding Office Action that a claim to priority of U.S. Patent No. 6,715,060 is not included in the first sentence(s) of the specification. Applicants respectfully submit that an amendment to insert a claim of priority to U.S. Patent No. 6,715,060 was requested by Applicants on page 1 of the Request for a Continuing Application Under 37 C.F.R. 1.53(b), which was filed with the Patent Office on August 27, 2003. Based on the comments in the Office Action, Applicants assume that the amendment has not been entered. Accordingly, via the amendments set forth herein, Applicants have amended the specification to include a reference to U.S. Patent No. 6,715,060. Since a reference to U.S. Patent No. 6,715,060 was included in the Request for a Continuing Application Under 37 C.F.R. 1.53(b) and it appears that the Patent Office has recognized the claim to priority, Applicants believe that a petition under 37 C.F.R. 1.78(a) is not required. See M.P.E.P. §201.11.

Response to Double Patenting Rejections

Claims 1, 3-5, 8, 9, 12, 13, 16, and 20-28 are rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 1, 1, 2, 4, 5, 6, 7, 8, 9, 11, 3, 2, 10, 19, 20, 21, 26, 23, and 27, respectively, of U.S. Patent No. 6,715,060. Submitted herewith is a terminal disclaimer pertaining to U.S. Patent No. 6,715,060, and Applicants, therefore, request that the double patenting rejections of claims 1, 3-5, 8, 9, 12, 13, 16, and 20-28 be withdrawn. See M.P.E.P. §804.02.

In filing the terminal disclaimer, Applicant relies upon the rulings of the Federal Circuit that the filing of such a terminal disclaimer does not act as an admission, acquiescence or estoppel on the merits of the obviousness issue. "In legal principle, the filing of a terminal disclaimer simply serves the statutory function of removing the rejection of double patenting, and raises neither presumption nor estoppel on the merits of the rejection." *Quad Environmental Tech. v. Union Sanitary Dist.*, 946 F.2d 870, 874 (Fed. Cir. 1991); *Ortho Pharmaceutical Corp. v. Smith*, 959 F.2d 936, 941-942 (Fed. Cir. 1992).

Response to §112 Rejection

Claim 3 presently stands rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 3 has been amended herein thereby mooting the 35 U.S.C. §112, second paragraph, of this claim. Therefore, Applicants respectfully request that the 35 U.S.C. §112, second paragraph, of claim 3 be withdrawn.

Response to §102 Rejections

A proper rejection of a claim under 35 U.S.C. §102 requires that a single prior art reference disclose each element of the claim. See, e.g., *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983).

Claim 1

Claim 1 presently stands rejected under 35 U.S.C. §102 as allegedly being anticipated by *Pomerene* (U.S. Patent No. 4,903,196). Claim 1 reads as follows:

1. A computer system for processing instructions of a computer program, comprising:
a plurality of pipelines configured to process and execute said instructions;
and
a scoreboard coupled to said pipelines, said scoreboard having a plurality of multi-bit registers, said scoreboard configured to receive a register identifier from one of said pipelines and to change a first bit in one of said multi-bit registers in response to said register identifier, said first bit indicating whether a pending write to a register identified by said register identifier exists, said register identifier associated with one of said instructions processed by said pipeline, **said one multi-bit register having a second bit indicative of a speculative state of said one instruction**, said scoreboard further configured to control said second bit based on whether an instruction for reading data retrieved by said pending write has been detected during said pending write. (Emphasis added).

Applicants respectfully assert that *Pomerene* fails to disclose at least the features of claim 1 highlighted above. Thus, the 35 U.S.C. §102 rejection of claim 1 is improper.

In rejecting claim 1, it is apparently asserted in the Office Action that the “tags” of *Pomerene* constitute the “multi-bit registers” recited by claim 1. However, there is nothing in *Pomerene* to indicate that the “tags” are indicative of a “speculative state” of any instruction. Thus, *Pomerene* fails to disclose at least a “multi-bit register having a second bit indicative of a speculative state of said one instruction,” as recited by claim 1.

For at least the above reasons, Applicants respectfully assert that *Pomerene* fails to disclose each feature of claim 1. Therefore, the 35 U.S.C. §102 rejection of claim 1 should be withdrawn.

Claims 5 and 20

Claims 5 and 20 presently stand rejected in the Office Action under 35 U.S.C. §102 as allegedly being anticipated by *Pomerene*. Applicants submit that the pending dependent claims 5 and 20 contain all features of their respective independent claim 1. Since claim 1 should be allowed, as argued hereinabove, pending dependent claims 5 and 20 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

Claim 8

Claim 8 presently stands rejected under 35 U.S.C. §102 as allegedly being anticipated by *Arora* (U.S. Patent No. 6,219,781). Claim 8 reads as follows:

8. A method for processing instructions of a computer program, comprising the steps of:
providing a pipeline and a scoreboard, said scoreboard including a plurality of multi-bit registers;
processing one of said instructions via said pipeline;
detecting that data produced via execution of said one instruction is unavailable;
detecting a pending instruction for reading said data; and
updating one of said multi-bit registers based on each of said detecting steps such that said one multi-bit register indicates an existence of a pending write associated with said one instruction and a speculative state of said one instruction, said speculative state based on said detecting said pending instruction for reading said data step. (Emphasis added).

Applicants respectfully assert that *Arora* fails to disclose at least the features of claim 8 highlighted above. Thus, the 35 U.S.C. §102 rejection of claim 8 is improper.

In this regard, *Arora* discloses a speculative register scoreboard 100 that appears to indicate speculative status of a register that has a pending write. Further, it appears that the

speculative status of a register can be changed from “speculative” to “non-speculative” if the “branch prediction is verified to be correct.” See column 4, line 41, through column 5, line 13. However, there is nothing to indicate that the speculative status of a register having a pending write is to be affected by whether another instruction for reading the data of the pending write has been detected. Accordingly, Applicants submit that *Arora* fails to disclose “detecting a pending instruction for reading said data” and “updating one of said multi-bit registers based on each of said detecting steps such that said one multi-bit register indicates an existence of a pending write associated with said one instruction and a speculative state of said one instruction, ***said speculative state based on said detecting said pending instruction for reading said data step,***” as recited by claim 8. (Emphasis added).

For at least the above reasons, Applicants respectfully assert that the cited art fails to disclose each feature of claim 8. Thus, the 35 U.S.C. §102 rejection of claim 8 should be withdrawn.

Claims 9, 12, 13, 16, and 29

Claims 9, 12, 13, and 16 presently stand rejected in the Office Action under 35 U.S.C. §102 as allegedly being anticipated by *Arora*. Further, claim 29 has been newly added via the amendments set forth herein. Applicants submit that the pending dependent claims 9, 12, 13, 16, and 29 contain all features of their respective independent claim 8. Since claim 8 should be allowed, as argued hereinabove, pending dependent claims 9, 12, 13, 16, and 29 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

Claim 23

Claim 23 presently stands rejected under 35 U.S.C. §102 as allegedly being anticipated by *Ramagopal* (U.S. Patent No. 5,838,943). Claim 23 reads as follows:

23. A system for processing instructions of a computer program, comprising:
a plurality of pipelines configured to process and execute said instructions;
a scoreboard coupled to said pipelines, said scoreboard indicative of which of a plurality of registers are associated with pending writes induced by retired instructions, **said scoreboard comprising data indicative of which of said retired instructions may be canceled**; and
circuitry configured to cancel at least one of said retired instructions based on said data. (Emphasis added).

Applicants respectfully assert that *Ramagopal* fails to disclose at least the features of claim 23 highlighted above. Thus, the 35 U.S.C. §102 rejection of claim 23 is improper.

In rejecting claim 23, it is asserted in the Office Action that element 26 of *Ramagopal* constitutes the “scoreboard” recited by claim 23. However, *Ramagopal* specifically teaches that the “Load/store unit 26 retains the speculative store memory access **until either the store memory access retires** or until an indication to restore the speculative store memory access is received.” (Emphasis added). Thus, once an instruction retires, it does not appear that any information pertaining to the instruction is retained in the element 26. Accordingly, it does not appear that the contents of the element 26 are “indicative of which of said **retired** instructions may be canceled,” as recited by claim 23. (Emphasis added).

For at least the above reasons, Applicants respectfully assert that the cited art fails to disclose each feature of claim 23. Thus, the 35 U.S.C. §102 rejection of claim 23 should be withdrawn.

Claims 30 and 31

Claims 30 and 31 have been newly added via the amendments set forth herein.

Applicants submit that the pending dependent claims 30 and 31 contain all features of their respective independent claim 23. Since claim 23 should be allowed, as argued hereinabove, pending dependent claims 30 and 31 should be allowed as a matter of law for at least this reason.

In re Fine, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

Claim 27

Claim 27 presently stands rejected under 35 U.S.C. §102 as allegedly being anticipated by *Ramagopal*. Claim 27 reads as follows:

27. A method for processing instructions of a computer program, comprising the steps of:
processing and executing instructions via a plurality of pipelines;
updating a scoreboard such that said scoreboard indicates which of a plurality of registers are associated with pending writes induced by retired instructions;
updating said scoreboard such that said scoreboard indicates which of said retired instructions may be canceled; and
canceling at least one of said retired instructions based on said scoreboard.
(Emphasis added).

For at least reasons similar to those set forth above in the arguments for allowance of claim 23, Applicants respectfully assert that *Ramagopal* fails to disclose at least the features of claim 27 highlighted above. Thus, the 35 U.S.C. §102 rejection of claim 27 should be withdrawn.

Claim 32

Claim 32 has been newly added via the amendments set forth herein. Applicants submit that the pending dependent claim 32 contains all features of its independent claim 27. Since claim 27 should be allowed, as argued hereinabove, pending dependent claim 32 should be

allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

Allowable Subject Matter

Claims 3, 4, 21, 22, 24-26, and 28 have been indicated as allowable by the outstanding Office Action if such claims are rewritten to include the limitations of their respective base claims and if the 35 U.S.C. §112, second paragraph, rejection of claim 3 is overcome. Claims 3, 21, and 22, have been amended such that they are now in independent form, and Applicants submit that pending claim 3 satisfies the requirements of 35 U.S.C. §112, second paragraph. Thus, Applicants respectfully request that the objections to claims 3, 21, and 22 be withdrawn. In addition, for at least the reasons set forth hereinabove, Applicants submit that the respective base claims of dependent claims 4, 24-26, and 28 are allowable, and claims 4, 24-26, and 28 are, therefore, allowable as a matter of law. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988). Accordingly, Applicants respectfully submit that claims 3, 4, 21, 22, 24-26, and 28 are allowable in their present form.

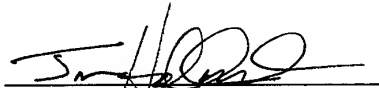
CONCLUSION

Applicants respectfully request that all outstanding objections and rejections be withdrawn and that this application and all presently pending claims be allowed to issue. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone Applicants' undersigned counsel.

Respectfully submitted,

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